

REMARKS

This Communication is responsive to the non-final Office Action mailed September 20, 2006. Claims 24-37 and 44-57 are pending. Claims 24-31, 34-37, and 44-57 have been amended. Claims 32 and 33 are withdrawn from consideration. Applicant's undersigned representative appreciates the courtesy of a personal interview granted by the Examiner and conducted on January 9, 2007 by Beverly A. Lyman with the Examiner. In view of the preceding amendments and the following remarks, Applicant respectfully submits that this application is in complete condition for allowance and requests reconsideration of the application in this regard.

Claims 24-30, 34-37, and 44-57 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,645,893 to Rickerby (hereinafter *Rickerby*). Of the rejected claims, claims 24, 34, 44 and 48 are the only independent claims. Applicant disagrees with the rejection.

The Examiner contends that *Rickerby* discloses "an aluminum containing alloy coating such as a platinum-group metal enriched aluminum containing alloy layer (col. 1 lines 58-67)." This bond coating "can be deposited by PVD (col. 3 lines 36-42) and subsequently heated in an oxygen-containing atmosphere to form an oxide layer (col. 3 lines 33-35)" without a carrier gas. The Examiner admits that *Rickerby* fails to disclose "where the generation of the reactant occurs." However, the Examiner contends on page 3 of the Office Action that this deficiency of *Rickerby* is remedied because "the reference clearly teaches of supplying two metallic precursors to form the platinum aluminide coating (col. 7 lines 20-34)."

The Examiner asserts in the Office Action that *Rickerby* discloses that the bond coating “can be deposited by PVD (col. 3 lines 36-42) and subsequently heated in an oxygen-containing atmosphere to form an oxide layer (col. 3 lines 33-35)” without a carrier gas. The Examiner further asserts that *Rickerby* “clearly teaches of supplying two metallic precursors to form the platinum aluminide coating (col. 7 lines 20-34).” As an initial matter, Applicant respectfully submits that the Examiner’s characterization of *Rickerby* is in error.

In contrast, Applicant submits that *Rickerby* actually fails to disclose that the bond coating (12a) in Fig. 2A is deposited with reliance upon PVD. Instead, *Rickerby* discloses that the bond coating (12a) is formed by depositing a MCrAlY coating with thermal spraying (col. 5, lines 61-65; col. 7, lines 54-57), depositing a platinum layer on the MCrAlY coating by electroplating or another process (col. 7, line 56 - col. 8, line 2), and then executing a diffusion heat treatment to mix the platinum layer with the MCrAlY to create a bond coating (12a) (col. 8, lines 3-21). A PVD process differs significantly from thermal spraying, electroplating, or a diffusion heat treatment. The outer ceramic coating (14) is then applied on the bond coating (12a) electron-beam physical vapor deposition (PVD). *See* col. 3, lines 36-42; col. 7, lines 56-57; col. 8, lines 24-25. When the outer ceramic coating (14) is formed, the oxide layer (16) noted by the Examiner is formed. *See* col. 6, lines 28-33; col. 7, lines 56-57; col. 8, lines 33-35.

As mentioned above, *Rickerby* discloses that the MCrAlY layer is deposited by thermal spraying. Thermal spraying is a coating technique in which gas or plasma atomises a molten spray material of MCrAlY into fine droplets that are then propelled towards an object. Thermal spraying does not involve supplying metallic precursors. *Rickerby* discloses that the platinum layer is deposited on the MCrAlY coating by electroplating or another process. Electroplating involves placing an object in a chemical bath containing platinum and using

electrical current to deposit a layer of platinum from the bath on the object. Electroplating does not involve supplying metallic precursors. *Rickerby* discloses that the platinum aluminide layer is formed by a diffusion heat treatment that mixes the platinum layer with the MCrAlY. A diffusion heat treatment does not involve supplying metallic precursors.

Claim 24 is directed to a simple chemical vapor deposition process and recites “coupling a single port of a receptacle in fluid communication with a main reaction chamber,” “heating the receptacle to form a first vapor phase reactant including a first extrinsic metal that is transported without assistance of a separate flow of a carrier gas from the receptacle to the main reaction chamber” and “generating a second vapor phase reactant including a second extrinsic metal inside the main reaction chamber.” *Rickerby* fails to disclose any of this subject matter. As disclosed in Applicant’s specification, transporting the first vapor phase reactant from the receptacle to the main reaction chamber without a corrosive or inert carrier gas distinguishes the claimed simple chemical vapor deposition process over dynamic chemical vapor deposition systems. *See, e.g.*, Applicant’s specification at page 4, lines 19-21; page 5, lines 14-18; page 13, lines 3-13. To establish a *prima facie* case of obviousness, the prior art reference being modified must teach or suggest all the claim limitations. *See* MPEP § 2143. Because of these deficiencies of *Rickerby*, the Examiner has failed to properly support that independent claim 24 is *prima facie* obvious. For at least this reason, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 24.

Furthermore, the Examiner has failed to provide a sufficient motivation to modify the process disclosed in *Rickerby*. The Examiner contends on page 3 of the Office Action that a person having ordinary skill in the art would understand that the two metallic precursors allegedly disclosed in *Rickerby* “do not originate in the reactor and they are either brought to the

reactor before deposition occurs or while deposition occurs.” The Examiner concludes that a person having ordinary skill in the art “would reasonably expect the deposition to be the same regardless whether the reactant was generated within the reactor or outside the reactor.” The Examiner further concludes that “it would have been obvious to change the location of the generation of the reactant with the expectation of obtaining similar results in the absence of a showing of unexpected results.”

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. *See* MPEP § 2143. A person having ordinary skill in the art would not modify the thermal spraying, electroplating, and thermal diffusion processes disclosed by *Rickerby* to form the bond coating (12a) to generate metallic precursors that originate in a reactor or that are brought into a reactor, as alleged by the Examiner. These disclosed processes differ dramatically from PVD or chemical vapor deposition. The Examiner relies upon an “expectation of obtaining similar results in the absence of unexpected results.” However, the fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish *prima facie* obviousness. *See* MPEP § 2143.01(IV). The Examiner has failed to identify any objective reason in *Rickerby* or any other prior art document to support that a person having ordinary skill in the art would be motivated to make the suggested modifications to *Rickerby*. In the Office Action, the Examiner has failed to provide any documentary evidence to support his conclusions. *See* MPEP § 2144.03. Therefore, the Examiner has failed to support that claim 24 *prima facie obvious*. For at least this additional reason, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 24.

Because claims 25-30 depend from independent claim 24, Applicant submits these claims are also patentable for at least the same reasons as claim 24. Furthermore, these dependent claims recite unique combinations of elements not disclosed or suggested by *Rickerby*.

Applicant's independent claims 34, 44, and 48, are patentable for at least the same or similar reasons as independent claim 24 in that each sets forth that the first vapor phase reactant is transported to the main reaction chamber without assistance of a separate flow of a carrier gas. With specific regard to independent claim 34, *Rickerby* fails to disclose or suggest "transporting a first vapor phase reactant containing a first extrinsic metal to the main reaction chamber via a closed pathway from an external receptacle and without assistance of a separate flow of a carrier gas." With specific regard to independent claim 44, *Rickerby* fails to disclose or suggest "transporting the first vapor phase reactant to the deposition environment inside the main reaction chamber via a closed first communication path coupling the receptacle with the main reaction chamber while the heated jet engine component is in the main reaction chamber and without assistance of separate flow of a carrier gas." With specific regard to independent claim 48, *Rickerby* fails to disclose or suggest "transporting the first vapor phase reactant from the receptacle to the deposition environment inside the main reaction chamber without assistance of a separate flow of a carrier gas from the receptacle to the main reaction chamber." For at least this reason, Applicant respectfully requests that the Examiner withdraw the rejection.

Because claims 35-37 depend from independent claim 34, claims 45-47 depend from independent claim 44, and claims 49-57 depend from independent claim 48, Applicant submits these dependent claims are also patentable for at least the same reasons as independent claims 34, 44, and 48, respectively. Furthermore, these dependent claims recite unique combinations of elements not disclosed or suggested by *Rickerby*.

Independent claim 48 is patentable for additional reasons. Specifically, *Rickerby* fails to disclose or suggest “placing an amount of a metal-halogen Lewis acid material in a solid phase into the receptacle” and “heating the metal-halogen Lewis acid held in a receptacle external to the main reaction chamber to form a first vapor phase reactant including a first extrinsic metal.” Because of these deficiencies in the disclosure in *Rickerby*, independent claim 48 and its dependent claims 49-57 are patentable for at least these additional reasons. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection.

Conclusion

Applicant has made a bona fide effort to respond to each and every requirement set forth in the Office Action. In view of the foregoing remarks, this application is submitted to be in complete condition for allowance and, accordingly, a timely notice of allowance to this effect is earnestly solicited. In the event that any issues remain outstanding, the Examiner is invited to contact the undersigned to expedite issuance of this application.

Applicant does not believe fees are dues in connection with filing this communication other than a one-month time extension fee. If, however, any additional fees are necessary as a result of this communication, the Commissioner is hereby authorized to charge any under-payment or fees associated with this communication or credit any over-payment to Deposit Account No. 23-3000.

Respectfully submitted,
WOOD, HERRON & EVANS, L.L.P.

/William R. Allen/
William R. Allen, Reg. No. 48,389

2700 Carew Tower
441 Vine Street
Cincinnati, OH 45202
(513) 241-2324